MISSOURI DEPARTMENT OF NATURAL RESOURCES
AIR AND LAND PROTECTION DIVISION
ENVIRONMENTAL SERVICES PROGRAM
Standard Operating Procedures

SOP #: MDNR-FSS-003 EFFECTIVE DATE: October 6, 2003

SOP TITLE: Sample Numbering and Labeling

WRITTEN BY: Trish Rielly, Environmental Specialist, Water Quality Monitoring Section, ESP

APPROVED BY: Earl W. Pabst, Director, ESP

SUMMARY OF REVISIONS: Minor grammatical revisions have been made to the sample labeling procedures. An example of the pre-numbered and unnumbered labels was added for reference.

APPLICABILITY: The procedures outlined in this SOP apply to all MNDR personnel involved in the collection of samples to be analyzed by the ESP.

DISTRIBUTION: ESP Intranet
ESP, SOP Coordinator

RECERTIFICATION RECORD:

Date Reviewed				
Initials				

1.0 SCOPE AND APPLICABILITY

Whenever a sample is collected, it is necessary for field personnel to correctly label each sample container to ensure appropriate analyses are performed and to ensure the integrity of the sample. Regardless of the number of containers needed, each sample collected must be given a unique identification number for tracking purposes.

2.0 PERSONNEL QUALIFICATIONS

Field personnel shall have a working knowledge of the department's sample collection procedures and considerations and will have, at a minimum, either attended the department-sponsored inspection and enforcement training or received training from an MDNR employee knowledgeable of the proper procedures.

3.0 SAMPLE LABELS AND THEIR USE

3.1 The sample labels can be obtained from the ESP Chemical Analysis Section.

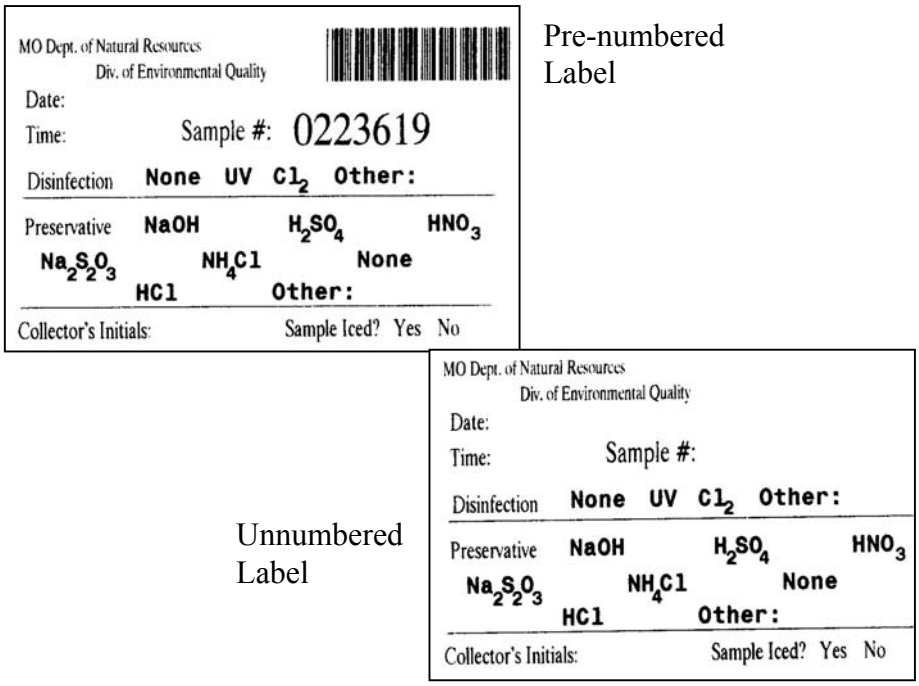
3.2 It is important to define what constitutes a "sample". The terms "sample" and "sample container" should not be confused. A "sample" is a representative portion of material (water, soil, sludge, sediment, waste oil, etc.). A "sample container" is something in which the material is held or carried, such as a jar or a vial. Depending upon the parameters requested and the analytical requirements, a single "sample" may require one or more "sample containers".

3.3 There are two types of self-adhesive labels used for identifying the sample containers. Both labels have the same basic information and require essentially the same entries by the collector (e.g., sample number, date, time, preservative, and collector's initials). A description and purpose for each type of sample label is presented below. See figure 1 for an example of pre-numbered and unnumbered sample labels.

3.3.1 The pre-numbered label has a unique seven-digit number printed on it. The first two numbers on the sample label correspond to the last two numbers of the calendar year that the sample is collected (e.g., a sample label with the number 0211357 is used for a sample collected in 2002). As stated previously, each sample collected must be given a unique pre-numbered sample label.

3.3.2 If a sample consists of more than one sample container, then a pre-numbered label is placed on one of the sample containers (it doesn't matter which one) and the rest of the containers for that sample receive unnumbered labels. The unique sample number appearing on the pre-numbered label must also be written on all of the unnumbered sample labels so that every container collected for that one sample has the same unique sample number assigned to it.

Figure 1. Example of Pre-numbered and Unnumbered Sample Labels



Note: The information recorded on the sample labels (date, time, sample number, and sample collector) must match that information recorded on the chain-of-custody record. Refer to MDNR-FSS-002 *Field Sheet and Chain-of-Custody Record* for information on completing a chain-of-custody record

3.4 There are several types of MDNR approved sample containers that must be used during a sample collection event (see MDNR-FSS-001 *Required/Recommended, Containers, Volumes, Preservatives, Holding Times, and Special Sampling Considerations*). The sample labels should be arranged on the sample containers so that the sample number and other pertinent information can be easily read. **Importantly, the sample labels should be applied to dry and clean sample containers**. To ensure that the labels don't come off, a description of how the sample labels should be attached to specific containers is described in further detail below.

3.4.1 Cubitainers, one-quart glass bottles and sampling jars (8 oz or 9 oz) - the sample labels should be affixed to the side of the sample containers, so the text is readable from left to right when the container is in an upright position. In addition, sample labels should be attached to the seamless side of all cubitainers.

3.4.2 VOA vials and other small bottles - the sample labels should be affixed on the side of the sample containers so the text is readable when the container is laid on its side.

3.4.3 For sample containers in which the sample labels are larger than the containers themselves (e.g. 1.5 oz and 2.0 oz sample jars) - the sample labels should be affixed to the sample container so the text is readable when the container is in an upright position. The sample labels should be aligned as close to the top of the sample container as possible without distorting the sample number or interfering with the lid. The lower portion of the sample labels should be carefully folded under the sample containers. In addition, the labeled sample containers should be placed within a plastic zip-locked bag to ensure sample label adhesiveness.

NOTE: Labels affixed to the outside of a glass container must be kept dry or the sample labels may peel from the container. Therefore, melted ice water must be drained from the cooler frequently and the sample containers may be placed in watertight plastic zip-lock bags.

4.0 PROCEDURE

4.1 As stated previously, the sample labels must be attached to a clean and dry sample container. All sample containers should be labeled before the collection of subsequent samples.

4.2 All information required on each sample label should be completed by the sample collector. An **indelible**, ballpoint ink pen should be used to fill in the necessary information. If preservation requires the sample to be kept cool, the sample containers should be placed in a cooler with ice upon collection. If indelible ink is not used, the melted ice could cause the ink to smear resulting in a loss of information.

4.3 A pre-numbered sample label must be attached to a sample container at which time the number on the sample label becomes the number for that sample. The sample number and other information is recorded on a Chain-of-Custody Record (see MDNR-FSS-*002 Field Sheet and Chain-of-Custody Record*). In cases where a sample requires more than one container, each container must be labeled and assigned the same sample number as indicated on the pre-numbered label. Each labeled sample container must indicate the preservation method used. This is done by choosing and circling the appropriate preservative type listed on the sample label (i.e. none, H_2SO_4, HNO_3, Hl, $Na_2S_2O_3$, NH_4Cl, NaOH, or other). The sample collector must also indicate on the label whether or not the sample was put on ice.

4.3.1 In cases where samples are disinfected either through chlorination or through the ultraviolet light process, the sample collector must indicate this on the sample label. The sample collector must choose and circle the appropriate abbreviation "Cl_2 or UV" for that particular sample along with appropriate preservation method used. In

addition, the sample collector will record in parentheses "chlorinated sample" or "UV disinfected sample" within the sample description area of the Chain-of-Custody Record.

4.4 In cases where a sample requires just one container, then a pre-numbered sample label will be used and the appropriate preservation method will be circled.

4.5 In summary, each sample must consist of at least one container bearing a unique pre-numbered label and the preservation method circled. Each subsequent container for that sample must be labeled with an unnumbered sample label and the preservation method circled. The necessary information is recorded on the Chain-of-Custody. The sample collector must ensure the information recorded on the sample labels (date, time, sample number, and sample collector) matches the information recorded on the chain-of-custody record.

5.0 EXAMPLES

5.1 A sample of water is collected from a creek in one container for sulfate analysis. There is no chemical preservative required for sulfate. The container would be labeled with a pre-numbered label and "none" for the preservation method would be circled. The date, time of sample collection, and the sample collector's initials must be written on the sample label. The sample must be put on ice in a cooler, which must also be written on the sample label.

5.2 A sample of water is collected from a lake in three containers for sulfate, total lead, and total phosphorus analyses. Any of the sample containers could receive the pre-numbered sample label. For this example, the container for sulfate analysis would receive the pre-numbered sample label and "none" for the preservation method would be circled. The total lead sample container would be labeled with an unnumbered sample label and "HNO_3" for the preservation method would be circled. The sample container for total phosphorus would be labeled with an unnumbered sample label and "H_2SO_4" for the preservation method would be circled. Since, all three containers are considered the same sample, the unnumbered sample labels would be assigned the same number as the pre-numbered label. In addition, the date, time of collection, and the sample collector's initials must be written on each sample label. The sample must be put on ice in a cooler, which must also be written on the sample labels.

5.3 A water sample is collected from the discharge of a wastewater treatment plant for BOD analysis. The facility is required to chlorinate the effluent discharge. The BOD sample container would be labeled with the pre-numbered sample label, "Cl_2" for disinfection method would be circled, and "none" for the preservation method would be circled. The sample collector would record "chlorinated sample" in the sample description area of the Chain-of-Custody Record. The sample must be put on ice in a cooler, which must also be written on the sample label.

6.0 SPECIAL CONSIDERATIONS

In cases when there is other pertinent information relating to a sample and it is necessary to notify the CAS of the sample's chemical composition, the information will need to be indicated on the sample label. As an example, when a sampled is filtered in the field for dissolved metal analysis, the collector must write "filtered" on the sample label in the space provided under the "other" preservative heading.

7.0 REFERENCES

MDNR-FSS-001, Required/Recommended, Containers, Volumes, Preservatives, Holding Times and Special Sampling Considerations

MDNR-FSS-002, Field Sheet and Chain-of-Custody Record